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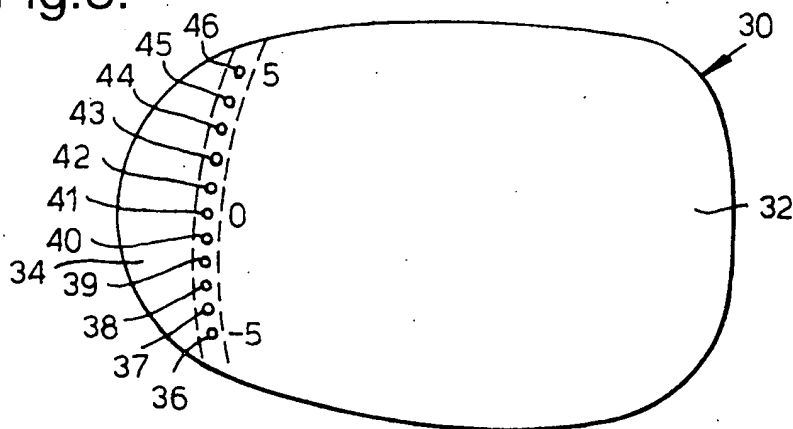
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(54) **Temperature indicator for motor vehicle**

(57) A temperature indicator for a motor vehicle arranged to indicate, to the driver of the vehicle, the ambient temperature either inside or outside the vehicle. The temperature indicator comprises thermochromic material (36-46) applied to the reflective member (30)

of a rear view mirror (10) and arranged in a line, locations along which are arranged to change colour at successively increasing temperatures. The line of thermochromic material (36-46) may be positioned to separate zones (32, 34) of the reflective member which differ in curvature.

**Fig.3.**



## Description

[0001] This invention relates to a temperature indicator for a motor vehicle arranged to indicate, to the driver of the vehicle, the ambient temperature either inside or outside the vehicle, the temperature indicator comprising thermochromic material applied to a reflective member of a rear view mirror and positioned so as to be visible to the driver of the motor vehicle.

[0002] FR-A-2386028 discloses a temperature indicator of this type in which the mirror glass of an exterior mirror has a coating which is clear and transparent when a threshold temperature is exceeded and which becomes opaque or coloured at temperatures below this threshold.

[0003] According to the invention, in a temperature indicator of the type described above, the thermochromic material is arranged in a line, locations along which are arranged to change colour at successively increasing temperatures.

[0004] The successively increasing temperatures may be in accordance with a standard scale, for example °C.

[0005] The invention also provides a rear view mirror having a temperature indicator of the type described above.

[0006] Embodiments of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of an exterior mirror for a motor car having a temperature indicator in accordance with the invention;

Figure 2 is an elevational view of a first alternative mirror glass in accordance with the invention for use with the mirror shown in Figure 1; and

Figure 3 is an elevational view, similar to Figure 2, of a second alternative mirror glass for use in the mirror shown in Figure 1.

[0007] Referring to Figure 1, a rear view mirror having a case 10 and a bracket 12 is mounted on a door 14 of a motor car 16. The case 10 contains a mirror glass 18.

[0008] Referring to Figure 2, the mirror glass 18 has a main zone 20, the dimensions of which are sufficient to provide the legally required field of view as described in EP-A-0860323. The zone 20 is surrounded on its outboard and bottom edges by an L-shaped zone 22 of greater radius of curvature. The outboard part of the zone 22 provides a view of the above mentioned "blind spot" while the bottom part thereof provides a view of the ground in the vicinity of the rear wheel of the car.

[0009] A strip 24 of thermochromic material is secured by adhesive to the second surface of the bottom part of the zone 22, before the reflective layer is applied to such second surface. The left-hand part of the strip 24 has a first colour 26 while the right-hand part has a second colour 28. The proportion of the strip with the colour 26

increases within increasing temperature. Scale markings are engraved on the mirror glass 20 to enable to temperature to be read from the boundary between the part with the colour 26 and the part with the colour 28. In the drawing, the temperature indicated is minus 1.5° centigrade, the scale markings extending from -5°C to +5°C. The entire strip takes up the first colour 26 when the temperature is above +5°C. The entire strip takes up the second colour 28 when the temperature is below -5°C. The strip 24 thus informs the driver whether there is a risk of ice on the road.

[0010] Figure 3 shows an alternative mirror glass 30 having a main zone 32 having a first curvature and an auxiliary zone 34 of greater curvature than the main zone 32 so as to extend the field of view into the so-called "blind spot" in which vehicles about to overtake are not visible, as described in EP-A-0864465. The boundary between the two zones 32 and 34 is marked by a row of eleven dots of thermochromic material 36-46. The dot 36 is arranged to change colour at -5° centigrade and each successive dot is arranged to change colour at a temperature of 1° centigrade higher than the next preceding so that the dot 46 changes temperature at +5° centigrade. Temperature indications -5, 0 and +5 are engraved on the mirror glass 30.

[0011] In both embodiments, the thermochromic material is a grafted chromic composite sold by Aimco S. A. (France) sold by Aimco S.A. (France) under the trademark "Retrogivre".

## Claims

1. A temperature indicator for a motor vehicle arranged to indicate, to the driver of the vehicle, the ambient temperature either inside or outside the vehicle, the temperature indicator comprising thermochromic material (24, 36-46) applied to a reflective member (18, 30) of a rear view mirror (10) and positioned so as to be visible to the driver of the motor vehicle, characterised in that the thermochromic material is arranged in a line, locations (26, 28; 36-46) along which are arranged to change colour at successively increasing temperatures.
2. A temperature indicator according to claim 1, wherein the mirror is an exterior mirror (10) and the mirror glass (18, 30) has a main zone (32) having a first curvature and an auxiliary zone (34) of greater curvature than the main zone, the thermochromic material (36-46) being positioned to provide a line of demarcation between the main zone (32) and the auxiliary zone (34) of increased curvature.
3. A temperature indicator according to claim 1 or 2, wherein the reflective member (18, 30) is made of transparent material and the thermochromic material (24, 36-46) is applied to the second surface of

... the reflective member (18, 30). ..

4. A temperature indicator according to claim 1 or 2,  
wherein the thermochromic material (24, 36-46)  
comprises a tape which is secured to the reflective 5  
member (18, 30) by adhesive.
5. A temperature indicator according to any preceding  
claim, wherein the thermochromic material (24,  
36-46) is arranged to change colour over a temper- 10  
ature range of -5°C to +5°C.
6. A vehicle rear view mirror (10) having a temperature  
indicator (24, 36-46) according to any preceding  
claim. 15

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Fig.1.

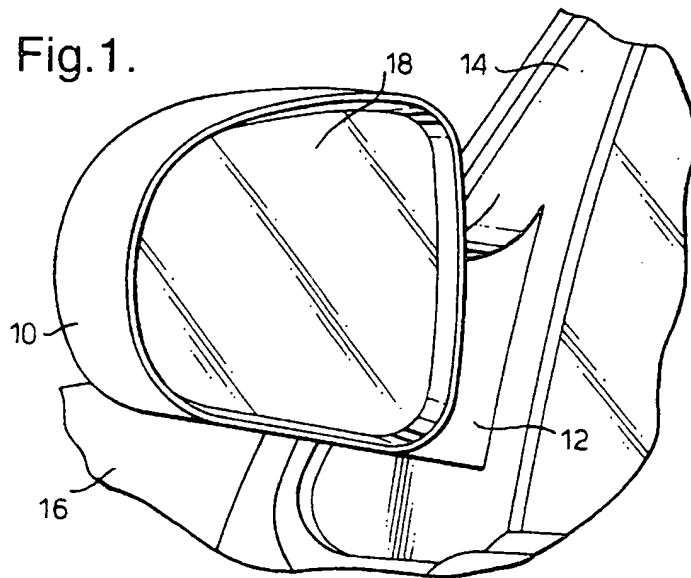


Fig.2.

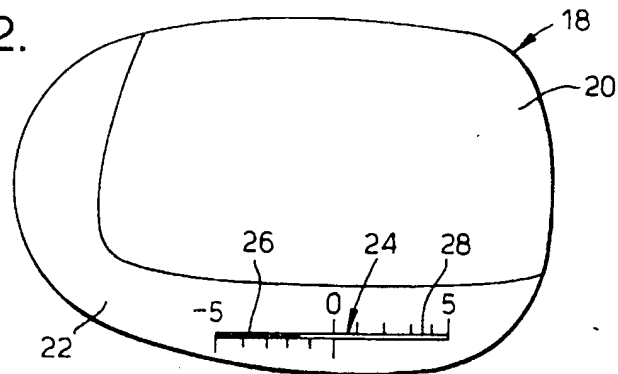
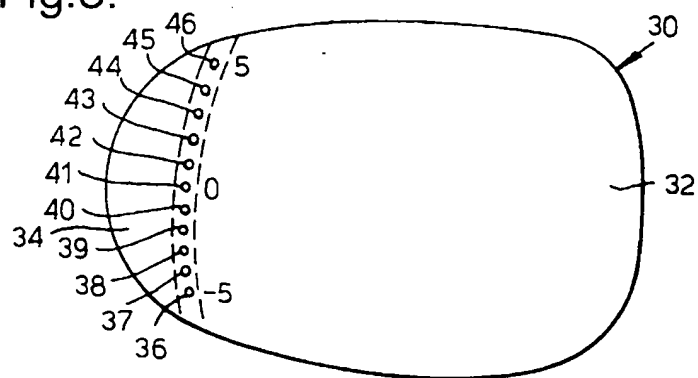


Fig.3.





European Patent  
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Application Number  
EP 99 30 7545

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The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 20 December 1999	Examiner Stuebner, B
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

EPO FORM 1503 03 82 (P4/C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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